

## Letters to the Editor

### The ecoinvent Database [Int J LCA 10 (1) 1–94 (2005)]

Anders Christian Schmidt\* and Allan Astrup Jensen

FORCE Technology, Energy and Environment, Hjortekærvej 99, DK-2800 Kgs. Lyngby, Denmark

\* Corresponding author ([acs@force.dk](mailto:acs@force.dk))

DOI: <http://dx.doi.org/10.1065/lca2005.02.002>

It was very interesting to read Int J LCA 10 (1) 2005. A whole issue dedicated to the release of a comprehensive and apparently consistent database for LCA practitioners is a fine way of celebrating the 10-year anniversary of the journal. Congratulations!

However, we miss the critical angle on the new Swiss database. This is not necessarily the role of the peer reviewers, but should rather be an issue for the LCA community as a whole. The arguments and discussion points put forward in this letter can be seen as a first iteration.

We have not yet had the opportunity of examining the database in any detail, neither with regard to the format of the data nor to their quality. We know that the managers of professional software products such as GaBi and SimaPro are wizards in respect to adapting new formats, but does ecoinvent actually provide us with the possibility of using the data according to other national methodologies?

Specifically, two statements given in Althaus et al. (2004) have raised our concern. The first statement is that secondary materials do not bear any burdens other than those caused by collection, purification and/or processing. Obviously, this will give constructors and manufacturers in almost all cases an incentive to choose products made of recycled materials and thus support the general societal desire to increase recycling. But is this default approach always in accordance with the actual consequences for the environment? When using a market-based approach as suggested by Weidema (2003), a more balanced view of the consequences can be obtained, giving incentive for using scrap when the market for the material in question is decreasing, and an incentive for supplying scrap when the market is increasing.

As an example, we have recently published two papers on insulation materials (Schmidt et al. 2004a,b), in which we argue that consumption of old newsprint for the production of paper wool insulation has the consequence that more virgin pulp for production of newsprint is needed. The current market situation in Europe is such that all collected old newsprint is recycled, and there is a demand for more. Thus, old newsprint is not waste (as assumed in ecoinvent) but a useful resource substituting virgin fibres. Therefore, it seems inappropriate to allocate all benefits of paper recycling to the user of secondary paper, in our case the manufacturer of paper wool. The paper would have been recycled anyway, e.g. in the production of newsprint, and this product has now to be produced in a larger degree from virgin fibres.

The second concern is related to the first. Althaus et al. (2005) stress that disposal has to be carefully considered. Switzerland and some other countries may have very efficient systems for collecting, sorting and treatment of organic building waste, but this is not the case for the majority of European countries. Careful demolition and subsequent sorting of building waste will most certainly increase the future rate and quality of recycling, but in our view it is very optimistic to assume that all combus-

tible material is incinerated (with or without energy recovery?). Likewise, we believe that it is too pessimistic to assume that all mineral materials are deposited in an inert landfill. Large – and increasing – amounts of mineral building waste of mineral origin are recycled in the EU, e.g. in road construction (Symonds Group 1999), thereby avoiding extraction of similar amounts of sand, gravel, etc. Collected used stone wool can even be 'truly' recycled, i.e. used as raw material for production of new stone wool. But there are large differences between the practices and possibilities in various European nations, and in order to obtain the most precise results, the database used must be sufficiently flexible to allow an analysis of different options.

In conclusion, we welcome the new database, and we also agree with the statement that the disposal stage is important for building materials. But we are afraid that the database is not sufficiently flexible for building materials to reflect the results of current and future practice, neither as to the choice of building materials nor the handling of demolition waste. When the ecoinvent database and the associated methodology are used in the planning of building constructions, especially outside Switzerland, a sub-optimal solution may very well be the result, despite showing a favourable environmental profile. Experienced LCA practitioners may be able to avoid this problem by establishing their own data, but users of ecoinvent-based tools will most probably not give a thought to the system boundaries behind the data they use.

We therefore hope that the database and the tools using the data will offer opportunities to model life cycles according to real market conditions and national practices now and in the future. Otherwise, the resulting LCA-based decisions will not reflect good scientific practice but only confirm the basic assumptions and rules used, when the database was established in Switzerland in the year of 2000.

#### References

- Althaus H-J, Kellenberger D, Doka G, Künniger T (2005): Manufacturing and Disposal of Building Materials and Inventorying Infrastructure in ecoinvent. Int J LCA 10 (1) 35–42
- Schmidt AC, Clausen AU, Jensen AA, Kamstrup O, Postlethwaite D (2004a): A Comparative Life Cycle Assessment of Building Insulation Products made of Stone Wool, Flax and Paper Wool. Part 1: Background, Goal and Scope, Life Cycle Inventory, Impact Assessment and Interpretation. Int J LCA 9 (1) 53–66
- Schmidt AC, Clausen AU, Jensen AA, Kamstrup O, Postlethwaite D (2004b): A Comparative Life Cycle Assessment of Building Insulation Products made of Stone Wool, Flax and Paper Wool. Part 2: Comparative Assessment. Int J LCA 9 (2) 122–129
- Symonds Group (1999): Construction and demolition waste management practices, and their economic impacts. Report to European Commission DGXI. Final Report, February 1999
- Weidema BP (2003): Market information in life cycle assessment. Environmental Project No. 863. Danish Environmental Protection Agency, Copenhagen